DOCUMENT RESUME

ED 466 692 TM 034 271

AUTHOR	Shim, Eunjae; Shim, Minsuk K.; Felner, Robert D.
TITLE	Automation of Survey Data Processing, Documentation and Dissemination: An Application to Large-Scale Self-Reported Educational Survey.
PUB DATE	2002-04-00
NOTE	12p.; Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, LA, April 1-5, 2002).
PUB TYPE	Reports - Descriptive (141) -- Speeches/Meeting Papers (150)
EDRS PRICE	EDRS Price MF01/PC01 Plus Postage.
DESCRIPTORS	*Automation; *Computer Software; Information Technology; Online Systems; *Surveys

ABSTRACT

Automation of the survey process has proved successful in many industries, yet it is still underused in educational research. This is largely due to the facts (1) that number crunching is usually carried out using software that was developed before information technology existed, and (2) that the educational research is to a great extent trapped in its methods of producing tabulations, charts, and reports. This paper demonstrates the use of an automated survey data processing and reporting system called AutoRide, to cut costs, increase turnaround, and improve the quality of products delivered in both paper and online formats. With it, customized reports are automatically generated with faster and reliable results. (Author/SLD)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 466 692

Automation of survey data processing, documentation and dissemination: An application to large-scale self-reported educational survey

Eunjae Shim, Minsuk K. Shim, and Robert D. Felner
University of Rhode Island

Abstract

Automation of survey process has proved successful in many industries, yet it is still under-utilized in educational research. This is largely due to the fact that: (1) number crunching is usually carried out using software developed before information technology existed, and (2) the educational research is to a great extent trapped in its methods of producing tabulations, charts and reports. In this paper, we will demonstrate how we use automated survey data processing and reporting system, called AutoRide, to cut costs, increase turnaround and improve the quality of products delivered in both paper and online formats. With it, customized reports are automatically generated with faster and reliable results.

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

E. Shim

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Paper presented at the Annual Meeting of the American Educational Research Association (New Orleans, Louisiana, April 1-4, 2002).

TM034271

BEST COPY AVAILABLE

Introduction

Automation has affected every part of survey process. Survey design, sampling, respondent selection, fieldwork administration, data capture, quality control, coding, editing, analysis, reporting and dissemination have all been influenced by technological changes. Computer assisted telephone interview (CATI), computer assisted personal interview (CAPI) and Web-based online survey make automated collection of large-scale surveys possible. Optical mark recognition (OMR) technology allows data capturing to be done quickly and efficiently. Recent development of internet technology makes the resultant data reported interactively on the Web.

Automation of survey process has proved successful in many industries [Hearn, 2000], yet it is still under-utilized in educational research. This is largely due to the fact that: (1) number crunching is usually carried out using software developed before information technology existed, and (2) the educational research is to a great extent trapped in its methods of producing tabulations, charts and reports. In this paper, we will demonstrate how we use automated survey data processing and reporting system, called AutoRide, to cut costs, increase turnaround and improve the quality of products delivered in both paper and online formats. With it, customized reports are automatically generated with faster and reliable results.

Background

A large-scale survey (hereafter, the Survey) was developed to examine the degree to which a broad range of recommendations for effective school reform are implemented in a school as well as to examine more fully their impact on students and staff. It has provided much needed empirical data for most of the major foundation-funded initiatives in middle grades including the Carnegie Corporation's Middle Grades School State Policy Initiative, the Lilly Endowment's Middle Grades Improvement Project, and the Kellogg Foundation's Middle Start Initiative. The survey has been extended to serve students in grades K-12 in other projects including the State of Rhode Island's ongoing statewide improvement efforts.

During the past 10 years, over 90,000 teachers and approximately one million students in over 3000 schools have participated in the Survey. In the case of Rhode Island, the Survey was used as an integral part of statewide accountability system [Felner *et al.*, 2001; Felner *et al.*, 2000]. The data collected from survey is summarized and presented in the format that helps schools understand their current status and the future goals. Over 300 public schools in Rhode Island participate in data collection each year. The data collected from teachers, students, administrators, and parents are tabled and charted via AutoRide and reported back to each school for their school improvement planning. As the reporting procedure includes a huge amount of information from a large number of schools, it is imperative that it is reliable and efficient. Time-sensitive survey data processing occurs during academic year. In most cases, we work with tight deadlines. In order to cover a wide range of schools with different building configuration, the procedure also needs to be flexible to be easily customized.

Technical Issues

AutoRide was developed using Visual Basic 6.0 with the OLE (Object Linking and Embedding) control [Balena, 1999]. OLE was used to run the application software by Visual Basic. The application software includes SPSS, Quattro Pro, WordPerfect and Harvard Graphics. Data Access Objects (DAO) in Visual Basic enables the user to access and manipulate data in local and remote databases created in Microsoft ACCESS format (see Figure 1). Macro functions in the application software are used to simplify Visual Basic programming and make the maintenance easy. Since Harvard Graphics does not support the OLE control in Visual Basic, SendKeys method in Visual Basic was used. SendKeys sends one or more keystrokes to the active window as if typed at the keyboard. SendKeys method is not safe and needs to have some knowledge of timing control. Extra time is helpful to ensure the task will be done in the time limit.

Figures 2 illustrates the interaction between various components necessary for the AutoRide to work. School data information database is integrated into the system to provide the parameters such as school name, network number (the year joined), grade range, and project name. And the

file information database was created to include the file information used to process all templates and files. AutoRide is designed to be user-friendly with graphic interface (see Figures 3 and 4).

Three running modes, interactive, batch, and easy batch modes are provided. In the interactive mode, a user interactively processes school by school. The user enters a school code, then select one of the application software to run (i.e., to run SPSS, to create WordPerfect tables, or to create Harvard Graphics charts). The user also selects which survey form to be used: teacher, student (elementary, middle, high, combined), TSRS (teacher-student rating scale), or parent surveys. In the batch mode, a user can process as many schools as possible. The user can select one or more options of running SPSS, WordPerfect or Harvard Graphics. Multiple types of survey forms can be selected (see Figure 5). In the easy batch mode, a user does not need to type school codes, to specify the application software, nor to specify survey forms. Once the user puts all raw data in one folder, AutoRide retrieves all the school codes in the folder and produce reports. This mode is very efficient when a large number of schools should be processed at once. AutoRide can process up to 100 schools per personal computer at one night, from running SPSS to creating all reports without any human presence. In addition to data reporting process, there are two additional programs developed to supplement AutoRide: verification of scanned data before reporting and PDF file extraction on the web. The scanned data verification checks the validity of input data by comparing this year's data with last year's data (min, max, mean values). It helps prevent errors in scanning and new survey design. After a hard copy report (over 150 pages) is produced for each school, each page is converted into the PDF (portable document format) file for Web publishing using PDF file extraction program. This process is also automated.

Benefits

Over three year period, AutoRide has reduced a significant amount of manual process for large-scale educational surveys and improved the efficiency of the survey processing system and the quality of the products that are delivered in both paper and online formats. The scope of automated process that is considered includes data processing, customized documentation, and electronic dissemination. Not only were hours saved in staff time, but the automation was also

much more error-free. A huge manpower was put to run the data processing in previous years. By using the automated system, one person can run all of data processing in much less time period. The accuracy was also greatly improved. Typically, one staff was able to run approximately 10 schools per day manually. After automation was implemented, data from more than 500 schools were processed overnight. This demonstration will show how the automated data processing can help process the survey data more reliably and efficiently. Hands-on demonstration format would be beneficial for interactive discussions and presentations.

References

Balena, F. (1999). *Programming Microsoft Visual Basic 6.0*, Microsoft Press.

Felner, R. D., Shim, M., Brand, S., Favazza, A., and Seitsinger, A. (2000). Improving achievement in the middle grades in mathematics and related areas: Lessons from the Project on High Performance Learning Communities. *Mathematics Education in the middle grades: Teaching to meet the needs of middle grades learners and to maintain high expectations*. National Academy Press: Washington, D.C., pp. 111-124.

Felner, R. D., Favazza, A., Shim, M., and Brand, S. (2001). A developmental ecological framework for whole school improvement and restructuring: Lessons for Project STEP and the Project on High Performance Learning Communities. *Journal of School Psychology,* v.39, n.2, pp. 177-202.

Hearn, P. (2000). Delivering results. *Proceedings of the ASC International Conference*, Association for Survey Computing, London: England.

Acknowledgements

The authors thank Liang Quan for help with programming of AutoRide.

Figure 1. System flowchart of AutoRide

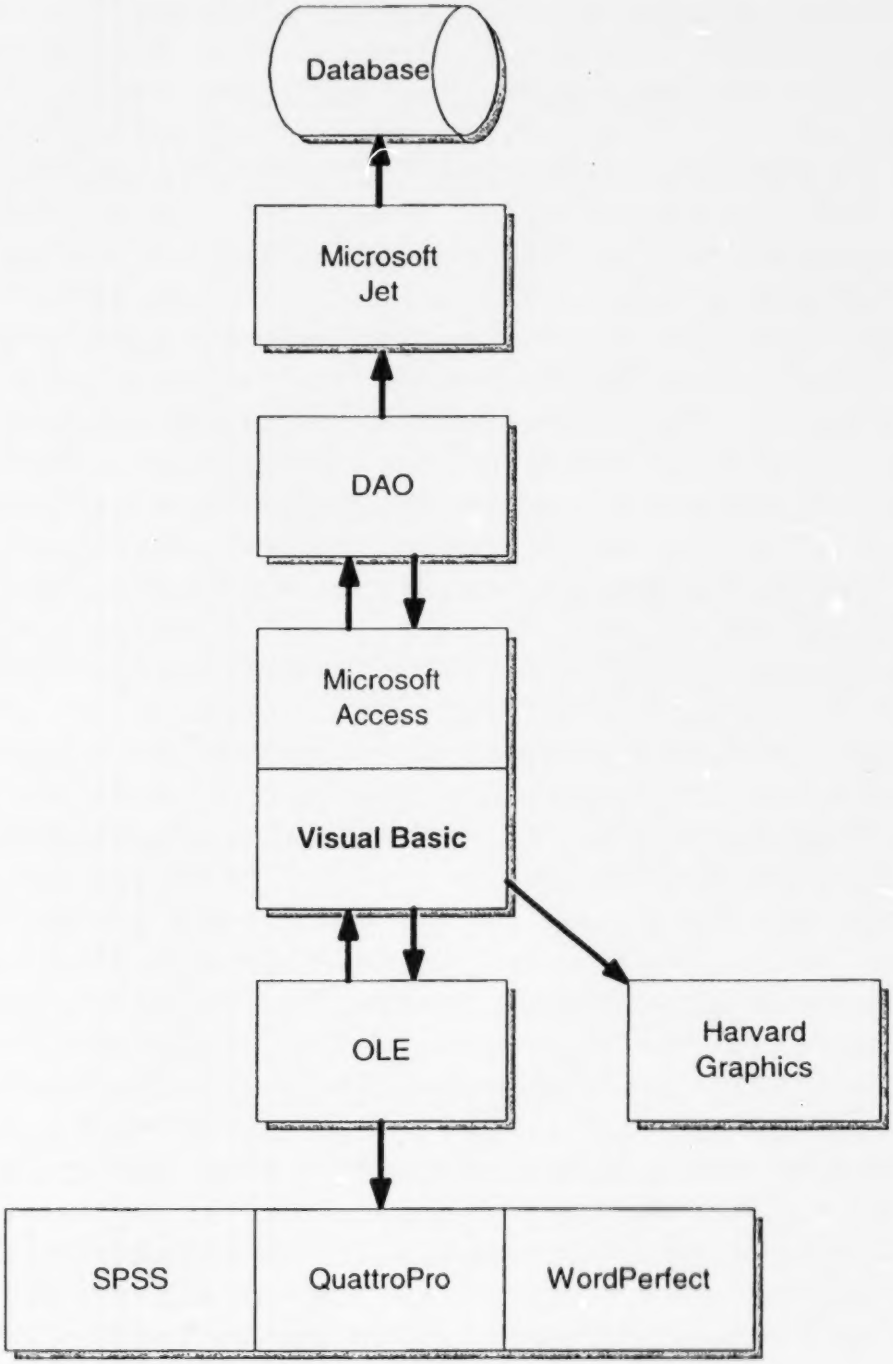


Figure 2. Procedure of AutoRide

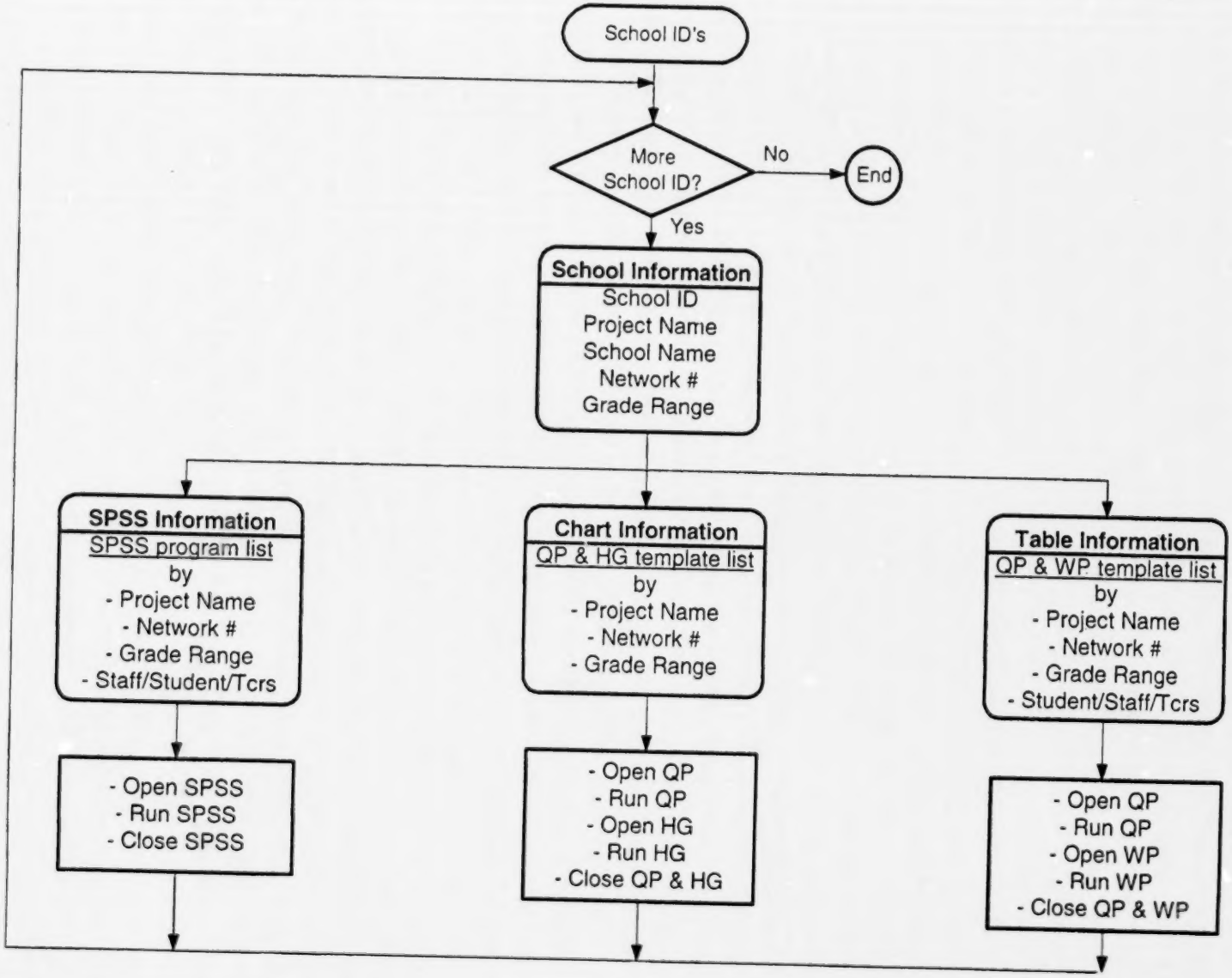


Figure 3. Screen shot of AutoRide (#1)

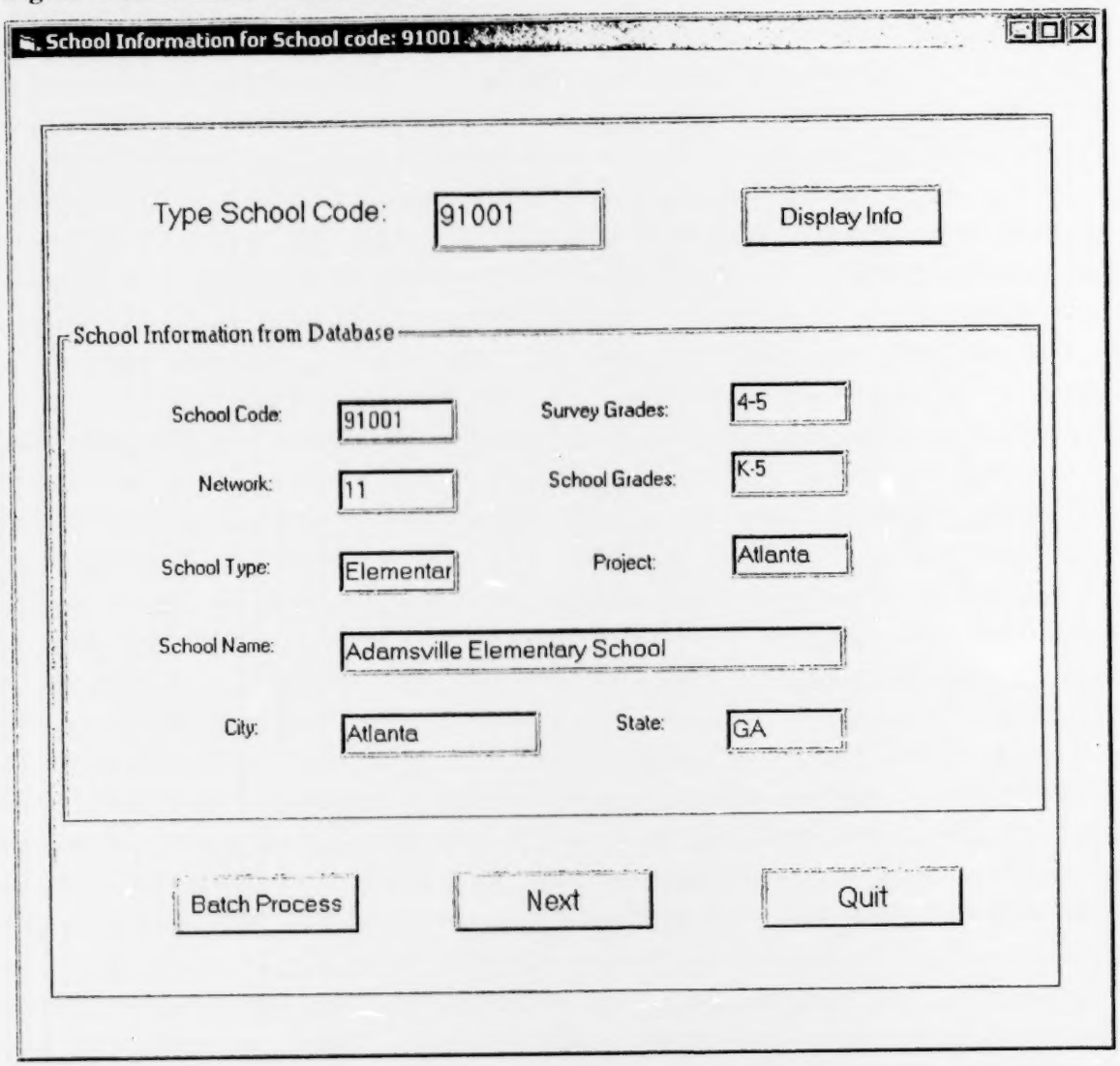


Figure 4. Screenshot of AutoRide (#2)

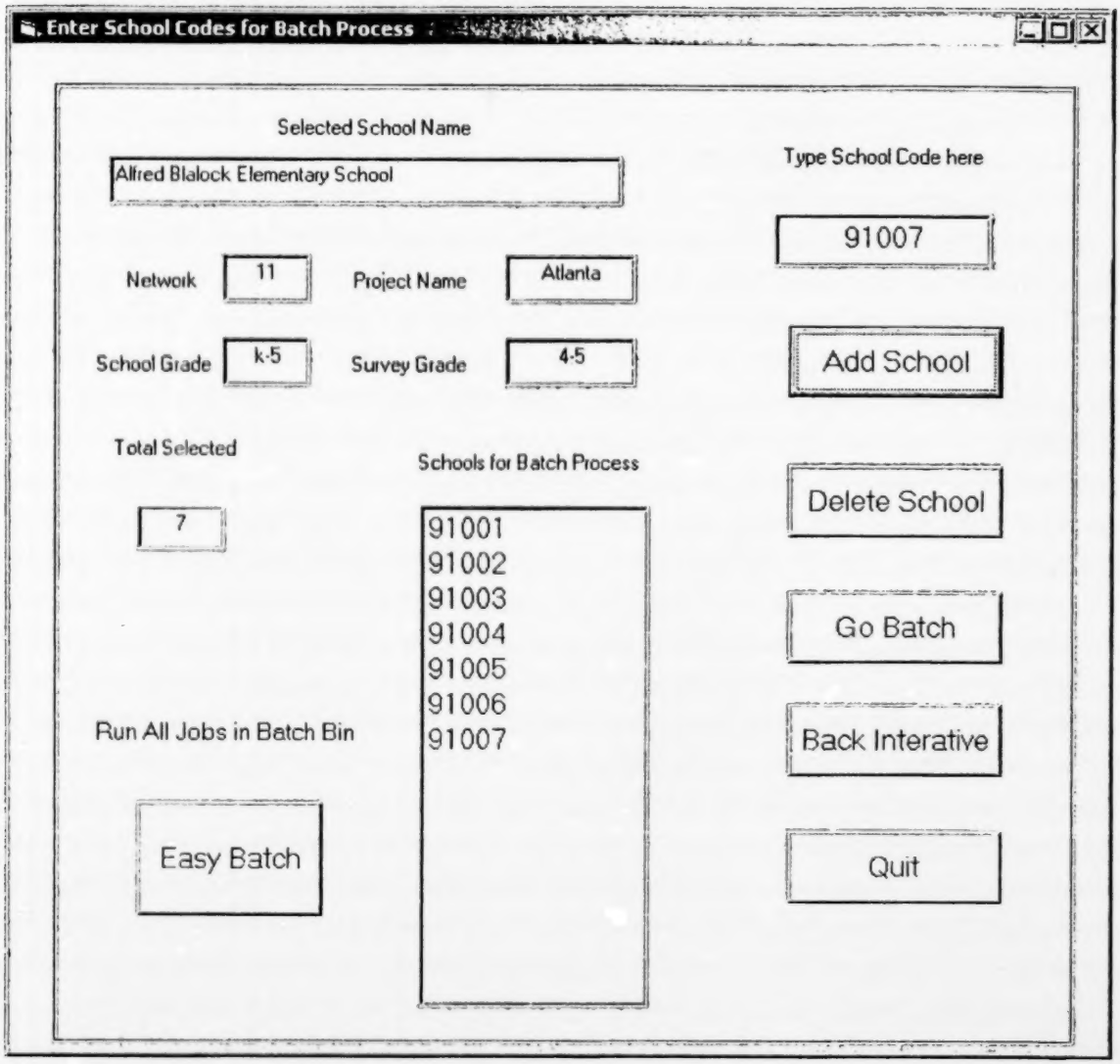
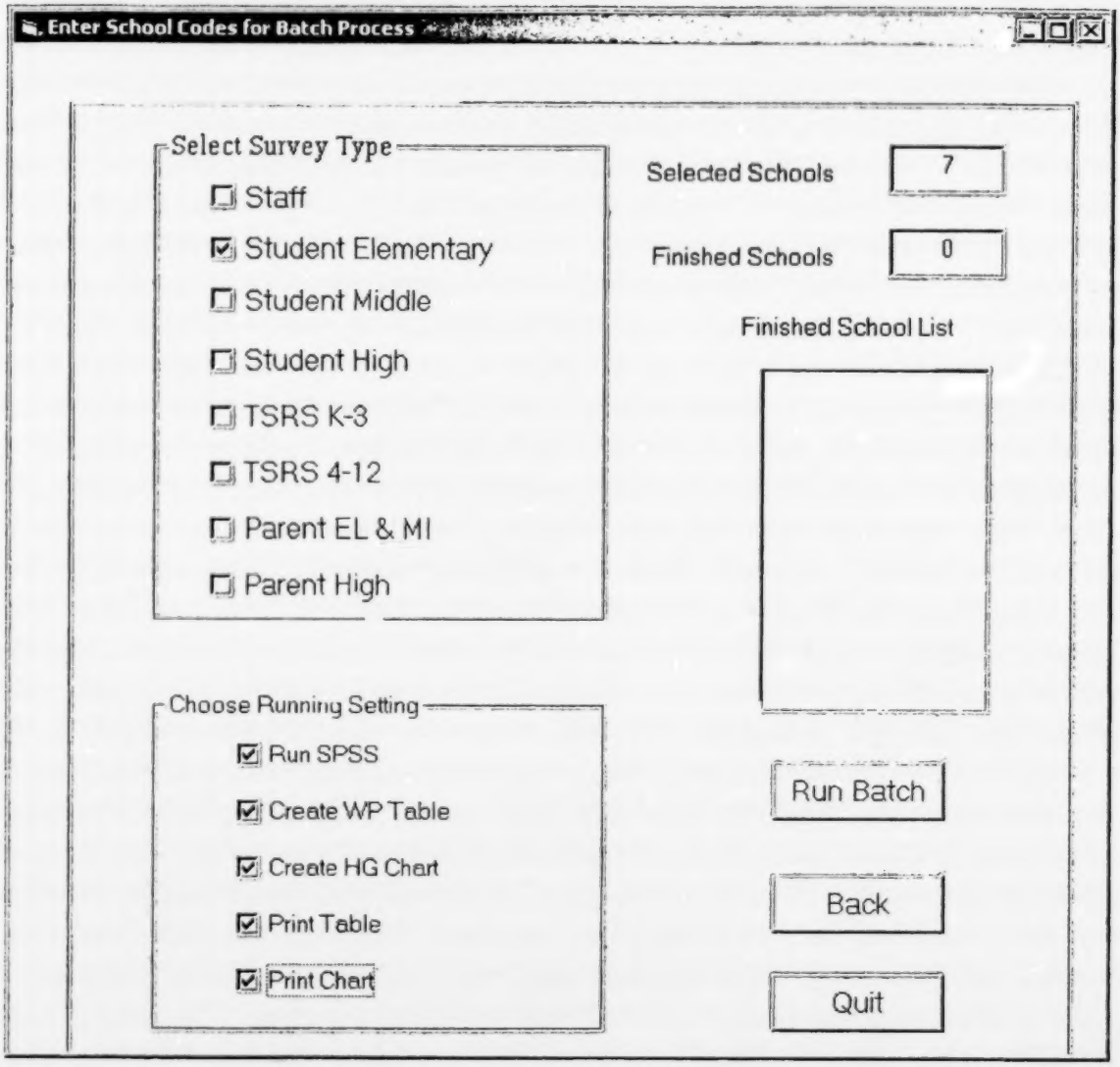


Figure 5. Screenshot of AutoRide (#3)



U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

ERIC

TM034271

REPRODUCTION RELEASE

(Specific Document)

I. DOCUMENT IDENTIFICATION:

Title:	Automation of survey data processing, documentation and dissemination: An application to large-scale self-reported educational survey
Author(s):	Eunjae Shim, Minsuk K. Shim, and Robert D. Felner
Corporate Source:	Publication Date:

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, *Resources in Education* (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic media, and sold through the ERIC Document Reproduction Service (EDRS). Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following three options and sign at the bottom of the page.

The sample sticker shown below will be affixed to all Level 1 documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

Level 1

☑

Check here for Level 1 release, permitting reproduction and dissemination in microfiche or other ERIC archival media (e.g., electronic) *and* paper copy.

The sample sticker shown below will be affixed to all Level 2A documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE, AND IN ELECTRONIC MEDIA FOR ERIC COLLECTION SUBSCRIBERS ONLY, HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2A

Level 2A

☐

Check here for Level 2A release, permitting reproduction and dissemination in microfiche and in electronic media for ERIC archival collection subscribers only

The sample sticker shown below will be affixed to all Level 2B documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2B

Level 2B

☐

Check here for Level 2B release, permitting reproduction and dissemination in microfiche only

Documents will be processed as indicated provided reproduction quality permits.
If permission to reproduce is granted, but no box is checked, documents will be processed at Level 1.

I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche or electronic media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries.

Sign here, → please

Signature: Eunjae Shim	Printed Name/Position/Title: Eunjae Shim | Assistant Professor (Res.)
Organization/Address: University of Rhode Island, 19 Upper College Road, Kingston, RI 02881	Telephone: 401 874 5680 FAX: 401 874 5453
	E-Mail Address: ejshim@uri.edu Date: 6/19/02

(over)

III. DOCUMENT AVAILABILITY INFORMATION (FROM NON-ERIC SOURCE):

If permission to reproduce is not granted to ERIC, *or*, if you wish ERIC to cite the availability of the document from another source, please provide the following information regarding the availability of the document. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available through EDRS.)

Publisher/Distributor:
Address:
Price:

IV. REFERRAL OF ERIC TO COPYRIGHT/REPRODUCTION RIGHTS HOLDER:

If the right to grant this reproduction release is held by someone other than the addressee, please provide the appropriate name and address:

Name:
Address:

V. WHERE TO SEND THIS FORM:

Send this form to the following ERIC Clearinghouse:

ERIC CLEARINGHOUSE ON ASSESSMENT AND EVALUATION
UNIVERSITY OF MARYLAND
1129 SHRIVER LAB
COLLEGE PARK, MD 20742-5701
ATTN: ACQUISITIONS

However, if solicited by the ERIC Facility, or if making an unsolicited contribution to ERIC, return this form (and the document being contributed) to:

ERIC Processing and Reference Facility
4483-A Forbes Boulevard
Lanham, Maryland 20706

Telephone: 301-552-4200
Toll Free: 800-799-3742
FAX: 301-552-4700
e-mail: ericfac@inet.ed.gov
WWW: http://ericfac.piccard.csc.com

EFF-088 (Rev. 2/2000)